Wafer News

Hitachi Cable boosts GaAs wafer capacity

HITACHI Cable continues to expand its GaAs substrate and epiwafer manufacturing capabilities. The company reports strong demand for its GaAs products with sales reaching a new record of 10 billion yen in fiscal year 1998.

Increased demand from LED and laser device makers has boosted requirements for boat-grown substrates and LPE epiwafers. Demand for LEC-grown substrates and MOVPE wafers has also been increasing dramatically, due largely to the growth of the microwave devices market, e.g. devices for cellular phones, the company said.

With its first phase of expansion complete, Hitachi Cable has begun the second phase of expansion. This includes an additional newly built, three-storey building which was completed in August giving the company 13,500 sq. m. of clean-room area.

Hitachi Cable is focussing on three main products. Firstly, MOVPE wafers for high frequency devices such as MESFET, pHEMT, DH-HEMT and HBT. Its current capacity is equivalent to 8000 4-inch wafers per month and will increase to 12,000 wafers per month in the next phase, which includes the increase of 5- and 6-inch wafers.

The second area is in LEC substrates with larger diameters of 5- and 6-inch. With the completion of the mass production line for the large wafers, production has increased dramatically with 25,000 to 30,000 wafers per month (an increase on the current 20,000 wafers per month) in the next phase.

Thirdly, in MOVPE Hitachi Cable has begun selling AlInGaP epiwafers for high brightness LEDs and AlGaAs epiwafers for lasers.

Hitachi Cable also has 4-inch production line (currently 8,000 wafers per month) using its original face-down horizontal type reactors. These exhibit very good uniformity across the wafer and excellent reproducibility with high throughput, it said, and the company is applying the reactors to multiwafer growth of larger size wafers. A special technique of fabricating the susceptors confers 4 x 5-inch or 3 x 6-inch diameter in the same reactor. Hitachi Cable has evaluated many epitaxial layers grown by this method and has found them comparable in quality to its 4-inch wafers.

About half of its reactors are now available for the growth of 6-inch epiwafers. Customer evaluation results of 5- and 6-inch epiwafers showed identical device performance and yield as 4-inch.

Hitachi Cable; tel: +81-3-5252-3463; fax: +81-3-3213-0402.

SiC News

Cree Research exhibits largest SiC crystals

AT the International Conference on Silicon Carbide and Related Materials (ICSCRM '99) at Research Triangle Park, NC, USA, Cree Research, Inc. showed the largest single crystal SiC wafers ever exhibited.

Cree says that the wafers have no visible defects such as microcracks that are typically found in larger diameter SiC wafers. Samples of the 4-inch (100 mm) wafers in both the 4H and 6H polytypes were unveiled.

Neal Hunter, chairman and CEO, said, "This powerful milestone is expected to become the foundation for future products and new innovative applications requiring larger sized SiC wafers. Development and demonstration of a high quality 4-inch wafer in less than a one year period is a remarkable achievement that has cemented our position as the leader in SiC materials research and production.

"We have made extraordinary progress in our materials development and will continue to push our efforts to exceed expectations."

Also at ICSCRM '99, the company announced immediate availability of 3-inch on-axis silicon carbide wafers. Additional 3-inch SiC wafer varieties will be added to the product family. Theoretically, 3-inch SiC wafers can more than double the number of chips per wafer over existing 2-inch technology. This is expected to significantly reduce the cost of devices made from SiC and has the potential to enable the company to increase volume to meet the high demand for its products.

Dr. Calvin H. Carter, Executive VP and Director of Materials Technology, and co-founder of the company, stated, "We are extremely excited about the introduction of our new 3-inch SiC wafer and the demonstration of our 4-inch wafer. We anticipate that the larger size wafers will ultimately provide economies of scale by increasing the number of chips per wafer which are expected to lower the cost per device.

"Cree is the only company known to be using 3-inch SiC wafers for production or to demonstrate a 4-inch SiC wafer. We expect our research efforts will continue to accelerate advances in SiC materials technology."

Cree Research; tel: +1-919-361-5709; fax: +1-919-361-4630.